

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
26 February 2004 (26.02.2004)

PCT

(10) International Publication Number
WO 2004/016181 A2

(51) International Patent Classification⁷: **A61B 17/064**,
17/32

(21) International Application Number:
PCT/EP2003/008821

(22) International Filing Date: 8 August 2003 (08.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
MI2002A001817 9 August 2002 (09.08.2002) IT

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicants and

(72) Inventors: PURICELLI, Cesare [IT/TT]; Via dei Platani, 36, I-33034 Fagagna (IT). PONTE, Gianni [IT/TT]; Viale Duodo, 74/4, I-33100 Udine (IT).

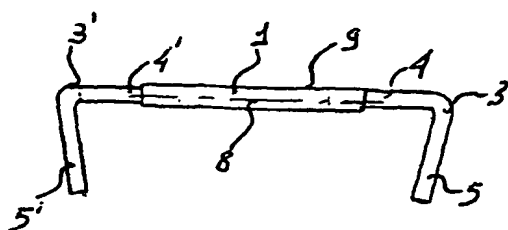
(74) Agent: GERVASI, Gemma; Notarbartolo & Gervasi S.p.A., Corso di Porta Vittoria, 9, I-20122 Milan (IT).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STAPLE FOR THE SUTURE OF THE STERNUM



(57) Abstract: A staple for the suture of the sternum having a central body with right and left threaded ends in which two teeth are screwed able to be introduced into suitable holes made astride a median sternotomy performed on a patient. Rotating the central body draws the teeth together or apart, thus tightening the two halves of the sternum with appropriate tension. The staple is suitable to be tightened by means of an apparatus provided with friction, to give the correct tightening tension. Also described are a method for the suture of the sternum and punch cutter forceps suitable to be used in such operation.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
26 February 2004 (26.02.2004)

PCT

(10) International Publication Number
WO 2004/016181 A3

(51) International Patent Classification⁷: **A61B 17/064**,
17/32, 17/82, 17/58

(21) International Application Number:
PCT/EP2003/008821

(22) International Filing Date: 8 August 2003 (08.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
MI2002A001817 9 August 2002 (09.08.2002) IT

(71) Applicants and

(72) Inventors: **PURICELLI, Cesare** [IT/IT]; Via dei Platani,
36, I-33034 Fagagna (IT). **PONTE, Gianni** [IT/IT]; Viale
Duodo, 74/4, I-33100 Udine (IT).

(74) Agent: **GERVASI, Gemma**; Notarbartolo & Gervasi
S.p.A., Corso di Porta Vittoria, 9, I-20122 Milan (IT).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

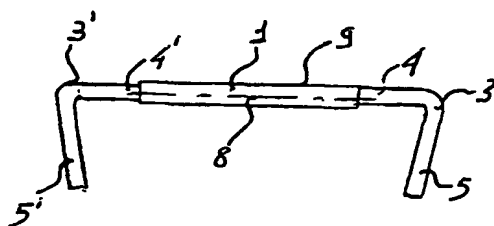
Published:

- with international search report
- before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments

(88) Date of publication of the international search report:
24 June 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STAPLE FOR THE SUTURE OF THE STERNUM



(57) Abstract: A staple for the suture of the sternum having a central body (1) with right and left threaded ends (2, 2') in which two teeth (3, 3') are screwed able to be introduced into suitable holes made astride a median sternotomy performed on a patient. Rotating the central body (1) draws the teeth (3, 3') together or apart, thus tightening the two halves of the sternum with appropriate tension. The staple is suitable to be tightened by means of an apparatus provided with friction, to give the correct tightening tension. Also described are a method for the suture of the sternum and punch cutter forceps suitable to be used in such operation.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/08821

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/064 A61B17/32 A61B17/82 A61B17/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 723 540 A (GILMER JR RAYMOND E) 9 February 1988 (1988-02-09) column 2, line 61 -column 3, line 14; figures 2,4 column 4, line 42 - line 47; figure 5 figures 6-9	1,2,6-8
Y A	---	3,4 12
Y	US 6 348 054 B1 (ALLEN DREW) 19 February 2002 (2002-02-19) column 7, line 46 - line 52; figures 14,15 ---	3,4
Y	DE 295 20 481 U (LOEPRECHT HENNING PROF DR MED ;STORM GERALD (DE)) 5 June 1997 (1997-06-05) claim 1; figures 1,2 ---	9,10
	--- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

10 May 2004

Date of mailing of the international search report

19/05/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Ducureau, F

INTERNATIONAL SEARCH REPORT

International Application No
PCT/EP 03/08821

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SU 772 541 A (LE NI NEJROKHIRURG I) 23 October 1980 (1980-10-23) the whole document ---	9, 10
A	US 2002/032465 A1 (LEMER JOSEPH) 14 March 2002 (2002-03-14) figure 1 ---	9, 12, 13
A	FR 2 694 696 A (MEMOMETAL IND) 18 February 1994 (1994-02-18) claim 1; figures 3A-3C ---	1, 3-5, 12
A	FR 1 051 847 A (CARRIERI BRUNOT) 19 January 1954 (1954-01-19) page 1, column 2; figures 1, 2 -----	1, 2, 12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/08821

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4723540	A	09-02-1988	NONE	
US 6348054	B1	19-02-2002	US 6059787 A US 2002173793 A1 AU 4485000 A CA 2368248 A1 EP 1179994 A1 JP 2002541967 T WO 0064361 A1	09-05-2000 21-11-2002 10-11-2000 02-11-2000 20-02-2002 10-12-2002 02-11-2000
DE 29520481	U	05-06-1997	DE 29520481 U1	05-06-1997
SU 772541	A	23-10-1980	SU 772541 A1	23-10-1980
US 2002032465	A1	14-03-2002	US 2002013607 A1 US 6358270 B1 AU 8052801 A CA 2416119 A1 EP 1309278 A1 WO 0209592 A1	31-01-2002 19-03-2002 13-02-2002 07-02-2002 14-05-2003 07-02-2002
FR 2694696	A	18-02-1994	FR 2694696 A1	18-02-1994
FR 1051847	A	19-01-1954	NONE	